

PROCEEDINGS OF SPIE

Imaging Spectrometry XXIII: Applications, Sensors, and Processing

Emmett J. Ientilucci

Editor

11–12 August 2019

San Diego, California, United States

Sponsored and Published by
SPIE

Volume 11130

Proceedings of SPIE 0277-786X, V. 11130

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in *Imaging Spectrometry XXIII: Applications, Sensors, and Processing*, edited by Emmett J. Lentilucci, Proceedings of SPIE Vol. 11130 (SPIE, Bellingham, WA, 2019) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510629530

ISBN: 9781510629547 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

SPIE.org

Copyright © 2019, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$21.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/19/\$21.00.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIE. DIGITAL LIBRARY

SPIDigitalLibrary.org

Paper Numbering: *Proceedings of SPIE* follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

- v *Authors*
vii *Conference Committee*

SPECTRAL DETECTION, PROCESSING, AND APPLICATIONS I

- 11130 04 **On clairvoyant and universal tests for hyperspectral target detection** [11130-3]
11130 05 **Multivariate analysis of Raman spectroscopy of wild type and mutants p53 cancer biomarker**
[11130-4]

SPECTRAL DETECTION, PROCESSING, AND APPLICATIONS II

- 11130 06 **Deep neural networks for compressive hyperspectral imaging** [11130-6]
11130 07 **Comparative analysis of data merging and fusion algorithms for the prediction of aerosol optical depth** [11130-7]
11130 08 **UAV 3D modeling with multi-spectral imaging: an example of wax apple tree** [11130-9]

INSTRUMENT DESIGN AND CHARACTERIZATION

- 11130 0A **Performance of a tiled array compressive sensing spectrometer** [11130-11]
11130 0B **Independent calibration approach for the CLARREO Pathfinder Mission** [11130-12]
11130 0C **Optical design of the Mapping Imaging Spectrometer for Europa (MISE)** [11130-13]
11130 0D **Compressive sensing for channeled polarimetry: applications in spectropolarimetry and imaging polarimetry** [11130-24]

CHARACTERIZATION AND APPLICATIONS

- 11130 0E **Progress toward an extremely compact hyperspectral imaging system for environmental characterization** [11130-15]

11130 0G **Palm-sized (80-mm cube weighing 0.5 kg) low-price (several thousand USD) mid-infrared (wavelength 8–14 μm) Fourier spectroscopic imager [11130-23]**

POSTER SESSION

11130 OK **Using Unmanned Aerial Vehicles (UAV) for forest damage monitoring in Southwestern Europe [11130-22]**